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CLINICAL NOTES OF CASES OF FOREIGN BODIES
LODGED IN OR ON THE IRIS, AND IN THE
ANTERIOR CHAMBER.

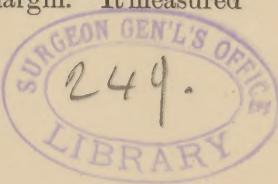
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In seven of the following cases the foreign bodies were situated either in, or on the iris and had not injured the lens capsule. In six of these cases the foreign substance was iron or some other metal and in one case it was a piece of stone. In all of these cases the extraction of the foreign body was followed by complete recovery.

To these cases I have added three others, in one of which the foreign body, a piece of a gun cap, was spontaneously expelled from the eye, four years after its entrance. In the two other cases the foreign bodies, a large piece of ~~stone~~ and a bird shot, lodged in the anterior chamber for years without causing irritation.

CASE I.—A Fragment of Steel in lower part of Iris. Removed with Iridectomy, eight days after Entrance. Recovery.

T. H., age 31, was struck in the left eye seven years before he came under my care. He was suffering much pain in eye. There was considerable ciliary injection all around the cornea, but most marked at the lower margin. The cornea was transparent, except at wound-entrance, where it was hazy. The wound was situated close to the inner lower margin. It measured



but 3 mms in length. The anterior chamber was of normal dimensions. The aqueous was slightly turbid. The foreign body, a piece of steel and apparently not thicker than paper, 4 mms. in length and less than one mm. in width, rested on the iris about midway between lower periphery and pupillary margin. The iris tissue was somewhat swollen and discolored. On the following day the patient was put under ether and a small incision made in the cornea below the foreign body, with a narrow knife. After several unsuccessful attempts the foreign body was extracted with a fine grooved forceps. During these manipulations the iris was considerably bruised and it was therefore thought best to excise the part on which the foreign body had been situated. This operation was followed by a mild iritis with fibrinous exudation from which the patient entirely recovered in the course of ten days. An examination of the vision of the injured eye made six weeks later showed, that it was $S=\frac{5}{6}$.

CASE II.—*A Piece of Soft Solder in the Iris. Extraction Sixteen Hours after Accident. Complete Recovery.*

P. J. æt. 50, while directing some workmen in repairing machinery felt something strike his right eye. He involuntarily rubbed his eye and as it seemed all right a few minutes later thought that the substance which struck the eye had fallen out again. About two hours later, during the night, his eye became so painful that he was unable to remain in bed. He went to a physician in his neighborhood who brought him to me at 5 o'clock in the morning. I found a very small wound in the cornea near centre; the anterior chamber was of normal dimensions and in upper inner quadrant of iris, about midway between pupillary margin and periphery was seen a metallic body, about the size of a small pin's head. The eye was otherwise entirely healthy. There was much photophobia and lachrymation, but only slight ciliary injection. I advised an operation for the removal of the foreign body and performed the operation about sixteen hours after the accident. The operation was done without ether. The incision in the cornea was made at inner upper sclero-corneal margin and measured about 4 mms. After several unsuccessful attempts to seize the foreign body with forceps, I

grasped the iris on both sides of the body drew it out of the corneal wound and cut it off. The operation was followed by only very slight reaction. Eight days later the patient was out, and the sight of the eye was $\frac{5}{6}$; five years later the eye remained in the same condition. The foreign body was found to be a piece of soft solder.

CASE III.—*Fragment of Iron in Iris. Iritis on Following Day. Iridectomy on Second Day. Complete and Speedy Recovery.*

Mr. Van R., aet. 40, came to me two hours after he felt something strike his eye. At the time of the accident he was driving a nail in a hard-board, and on examining the head of the nail found that a piece of it was gone. He was not suffering any pain in eye but his sight was blurred. I found an irregular wound near centre of cornea, the anterior chamber was evacuated, and in upper outer quadrant of iris was seen a piece of glistening metal about 3 mms. in length and about one half of a mm. in width, it was apparently embedded in the iris tissue. There was but little irritation. Sight was not examined. I applied a pressure bandage, and urged the man to let me remove the foreign body in the afternoon of same day, but he declined to have an operation made. In the afternoon of the following day I was called to his house as he was suffering much pain in eye. I found the cornea hazy especially in the vicinity of the wound, the anterior chamber was restored, the aqueous was very turbid, and the iris swollen and discolored. The foreign body was no longer visible, but in its stead, a whitish granular exudation was seen at the place occupied by the foreign body on the day before. I at once put the patient under ether and made a large iridectomy upward and outward. I placed a branch of the forceps on each side of, and a little below, the whitish exudation and thus withdrew the foreign body with the iris. On the following day the cornea was much clearer, the aqueous was transparent and the iris was of normal color. A week later, the eye was white and all symptoms of the kerato-iritis had disappeared. S was slightly impaired by the central scar in the cornea. Three

years later the sight was as good as before the accident. The foreign body was found to be a piece of iron.

CASE IV.—A Piece of Iron on Iris. Extraction of Foreign Body five weeks after Accident. Recovery.

J. G., aet. 21. Five weeks before I saw him for the first time, he felt something strike his eye while he was hammering. Until very recently he was free from pain. On examination I found considerable ciliary injection around the entire cornea. Cornea was clear except in lower part where there was a linear scar about 3 mms. in length. The anterior chamber was of normal dimensions. The aqueous clear. Iris of normal color and texture. The foreign body, a piece of iron about 4 mms. in length and one mm. in width was lying free on the iris about 1 mm. from inner margin just below the horizontal meridian. The pupil was free and active. An operation was advised but declined. Eleven days later the patient returned. With exception of increased ciliary neuralgia the condition was as above stated. On the same day I made an incision with a lance-shaped knife, about 4 mms. in length, almost over the foreign body; grasped this with forceps and extracted it. There was no prolapse of iris and pupil remained perfectly round. The wound healed by first intention. No iritis developed. Sight was as good as before the accident.

CASE V.—A Piece of Iron on Iris. Extraction without Iridectomy. Recovery.

W. H., aet. 45. Foreign body entered eye two days before I saw him. I found a linear wound with yellowish lips between the outer margin and centre of cornea. Cornea around wound hazy. Anterior chamber of normal dimensions. Iris discolored but not much swollen. Pupil small. The foreign body was found on the iris near outer periphery. It was a thin piece of iron about 3 mms. in length and 1 mm. in width. On placing an electro-magnet on cornea over foreign body, this came forward and with it the iris. I made an incision about 3 mms. in length, with a lance-shaped knife, a little below the foreign body, and although the knife was quickly withdrawn all the aqueous escaped. Several attempts to draw out the foreign body with the

magnet having failed, I removed it with the forceps. The iris did not prolapse. Eserine was instilled. Ten minutes later the pupil was found to be very small and round. The operation was followed by no reaction and the wound of entrance healed speedily, leaving only an insignificant scar. A week later sight was as good as in the other eye, and the pupil free.

CASE VI.—A Fragment of Iron on Iris. Extraction with Magnet. Recovery.

J. P. S., aet. 35. Was struck in right eye by a piece of iron half an hour before I saw him. The eye showed slight ciliary injection. In cornea near outer margin was a small linear wound, otherwise it was clear. The anterior chamber was of normal dimensions and the aqueous was transparent. The iris was of normal texture, close to inner periphery a little above the horizontal meridian, a piece of metal about 5 mms. in length and less than a mm. in width, was seen to stick with one end in the iris while the other was projecting full in the anterior chamber. Two hours later the foreign body was found lying flat on the iris in the same position. On applying the electro magnet to the cornea over the foreign body, this flew up against the cornea, and was then moved by the magnet to the lower half of the iris about midway between the periphery and the pupillary margin. Here I made a small oblique incision in the cornea, and withdrew the knife so quickly that but a small quantity of the aqueous escaped. I then introduced the point of the magnet into the wound, and on withdrawing it found the foreign body hanging to it. Eserine was instilled immediately afterward, and a bandage applied. A few hours later the pupil was found small and round. The wound healed by the first intention. No iritis followed. A week later the patient was discharged from the hospital, and now six months later his sight in this eye is perfect.

CASE VII.—Burn of Cornea. A Fragment of Stone on Iris. Extraction on Second Day. Recovery.

R. B. aet. 23, had his face and left eye burned by the premature explosion of a mixture of powder and sand two days before

he came to me. I found chemosis and intense injection of the ocular conjunctiva. The whole cornea was hazy and rough especially in central part. A little above centre of cornea was an irregular wound. The anterior chamber was rather shallow ; the aqueous was muddy, and a moderate hypopyon occupied lower part of anterior chamber. The iris was swollen and resting on it in upper outer quadrant, about a mm. from pupillary margin was seen a foreign body of about the size of a large pin's head. As far as could be ascertained the lens was not wounded. On the same day I made a small iridectomy upwards, withdrawing the foreign body with the iris. Under the protective bandage and atropine the eye speedily recovered. Two weeks later the patient was discharged without impairment of vision.

An analysis of the above cases shows that symptoms of iritis showed themselves very soon after the lodgment of the foreign body in four of the cases ; in one of these swelling of the iris is noted as present three hours after the accident. In the remaining three cases only hyperæmia of the iris existed at the time the patient came under observation ; one on the second day, one on the third, and one in the fifth week after the entrance of the foreign substance in the eye.

Why in one case a foreign body should cause the development of an iritis very speedily after its lodgment, while in another the prolonged contact of the metallic body with the iris failed to produce even a morbid hyperæmia, it is difficult to understand. As the foreign bodies in the above cases were all nearly of the same size, and consisted of iron or sand, the mechanical and chemical effects produced by them in the iris can not have differed sufficiently to account for the different degrees of reaction witnessed in these cases.

The experiments made by Leber¹ on rabbits have shown that sharp pointed, aseptic fragments of steel carefully introduced into the anterior chamber do not produce inflammation of the iris, and the inference seems, therefore, very natural that if an inflammation follows the lodgment

1 Græfes' Archiv. f. Ophthalmologie) Bd. xxx, Abtheil. 1. p. 246.

of a piece of iron in the iris that the foreign body has taken with it septic matter into the eye. No one has, however, as yet, proved that such is actually the case. On the other hand Leber's¹ examination of foreign bodies immediately after their extraction from the eye and of eyes containing foreign bodies immediately after exucleation, have thus far failed to discover micrococci or other parasitic elements within the foreign bodies or in the tissues, and the inflammatory product in which these were situated.

With regard to the treatment employed in the above cases, I have but few words to add. Believing that in every case in which the eye shows signs of irritation, nothing short of the removal of the foreign body will avert further damage to the eye, I have never lost time in trying to subdue the irritation by other means. In several cases I operated while the iris was intensely inflamed, and in all but one of these the iritis subsided speedily. In the case in which it did not, the iris was much bruised, in consequence of insufficient size of corneal wound. Wherever practicable, I have extracted the foreign body without an iridectomy, except in cases with marked iritis. In these the iridectomy seems to exert a favorable influence. For the removal of the foreign body I have used mostly a pair of very delicate grooved forceps in cases where the foreign body was entangled in the iris, and Knapp's foreign body hook, or an ordinary blunt hook, when the body was lying on the membrane. Very little difficulty will attend the removal, provided the incision in the cornea is sufficiently large. I have usually made the incision with a narrow knife, sometimes with a Beer's cataract knife, which seems best adapted for cases requiring a large opening. Pieces of iron and steel can doubtless be extracted with the magnet in many cases, especially if there is an anterior chamber.

A small and oblique incision in the cornea and the quick withdrawal of the knife, so as to prevent as much as possible the escape of the aqueous, seems desirable if the foreign body is so situated that the incision can not be made close to it. With a powerful magnet (I prefer Bradford's electro-magnet) the foreign body may be drawn from a considerable distance, provided some

1 Op. cit. p. 249.

aqueous remains, and it is therefore only necessary to select a point of sufficient size to fill the opening in the cornea and to push it only a short distance in the anterior chamber to make sure of getting the iron into the wound where it can be removed with forceps. Should iris prolapse, it may be cut off or returned into the anterior chamber, if this can be done without much bruising. Eserine should be applied at once if no iritis is present.

CASE VIII.—A Large Piece of Stone in Anterior Chamber for two Years without Producing Disturbance.

The patient, an Italian laborer, at. 45, came to the Newark Charitable Eye and Ear Infirmary, for treatment of a scald of his right eye. On examination the cornea was found to be very hazy in lower half, and the epithelium of this part destroyed. The lower third of the anterior chamber was filled with a mass, the exact nature of which could not be made out. It looked, however, like a fibrinous exudation around a thin piece of metal, the sharp edge of which was apparently projecting slightly through the upper surface of the exudation. The upper part of the iris was normal. The pupil was free and active. No injury of lens or deeper parts. As I was unable to discover a wound in the cornea, and the patient was not able to converse in a language with which I am familiar, I deferred the making of a diagnosis until an interpreter could be obtained. It was then learned that the eye was wounded two years before in an explosion in a mine. That he was treated for months in a hospital in Canada and discharged after the inflammation had passed off. The mass in his eye he noticed shortly after his departure from the hospital, but as it did not give him any inconvenience had not considered it worth while to consult a surgeon with regard to it. On close examination I now found a long linear scar at the lower outer sclero-corneal junction.

After his recovery from the scald I removed the foreign body in the following manner: Hoping to be able to pass a narrow knife behind what I still thought to be an exudation around a foreign body, I entered the knife at outer margin of cornea, 2 mms. below horizontal meridian, with the intention of making the counter-puncture at inner margin, but had advanced only

a short distance when the point of the knife came in contact with the mass, which felt as hard as stone. Finding it impossible to advance the knife any farther in the direction I had intended to take, I withdrew it partially, then directed the point downward and made a small incision in outer lower margin. I next enlarged the incision with a strong pair of strabismus scissors to about one fourth of the circumference of the cornea. I then grasped the end of the mass nearest the outer margin with anatomical forceps, and withdrew it lengthwise without the slightest difficulty. A tag of iris prolapsed and was abscised as it was found impracticable to reduce it. The wound healed in the course of a week, and the eye has since then given him no trouble. The foreign body was found to be a piece of granite.

CASE IX.—*A Bird Shot in Lower Part of Anterior Chamber for Eight Years, without Causing Irritation.*

C. H., aet. 13, I saw for the first time eight years ago. Three days before her visit to me she had been shot in the left eye. Several pieces of shot were lodged in the lids and one in the ocular conjunctiva. At upper sclero-corneal junction was a prolapse of iris, about the size of a lentil. The cornea was clear. The anterior chamber filled with blood. I removed the pieces of shot in the lid, and in the conjunctiva, and abscised the prolapsed iris. Under cold applications and atropia, the blood was absorbed in a short time. It was now seen that the lens had been injured, as cataract was developing, and in lower part of anterior chamber was found a round body similar to the shot previously removed. Nothing further was done. Since then I have seen the patient from time to time. The eye now diverges. There is a membranous cataract to which the pupil is adherent and the shot remains in the same position. At no time has this eye shown signs of irritation since the injury, and I have, therefore, not felt called upon to interfere. The eye has good perception of light, but the visual field is deficient downward, and I shall have no hesitation in removing the eye if symptoms of inflammation develop.

CASE X.—*Spontaneous Expulsion Through the Cornea of a Large Piece of a Gun-cap Four Years After its Entrance into the Eye.*

F. J. U., æt. 24, states that four years ago a piece of a gun-cap struck his right eye. Considerable inflammation followed. Since then he has been blind in the eye. Until recently the eye has given him no further trouble. Now he has pain. There is considerable ciliary injection, especially in upper part. In lower part of cornea is a triangular scar, and at upper sclero-corneal junction is situated a yellow pustule about the size of a split pea. The cornea adjoining is hazy, but otherwise it is clear. Connected with the yellow pustule mentioned is a mass of pus, which hangs in upper part of anterior chamber. The iris is discolored. The pupil excluded. Cataracta acreta. Perception of light fair. Visual field intact. I ordered warm fomentations and instillation of atropia. Two days later all pain had left the eye, and the mass of pus in upper part of anterior chamber had fallen to the bottom. Otherwise there was no change. Patient was told to come again in a few days, but remained away for seven months. He now felt something sharp scratching the upper part of the eye and wished me to remove it. I at once saw that the pustule had broken and a sharp point protruded from it. Examination showed the foreign body to be metallic. Careful traction failed to dislodge it, and I therefore placed the patient under ether, enlarged the opening with scissors, and withdrew the foreign body, without difficulty. No aqueous or vitreous escaped. The wound healed kindly in the course of a week. Subsequent examinations have left it undecided as to where the foreign body was situated. The iris is adherent to cornea a mm. below upper corneal margin, and it is therefore very probable that it lodged partly in iris and partly in lens. The foreign body was a thin piece of copper, 4x3 mms.

It seems most probable that in this case the foreign body was encapsulated for about four years, then a rupture of the capsule occurred from some cause or other and a new localized suppuration set up by the fragment of copper in its vicinity, which led to perforation of the cornea.

Instances of the spontaneous expulsion of foreign bodies from the eye must be very rare, as I have been able to find but one case on record. This is reported by Dixon, in *Dublin Quarterly Journal*, 1848, p. 210. I have been unable to read the case in the original, but from the excerpt given by Cooper in his book "On Wounds and Injuries of the Eye, London, 1859," it appears that in Dixon's case a piece of gun-cap was expelled eight years after its entrance.

[The Editor of this journal reported a similar case in the Archives of Ophthalmology and Otology, Vol. VI. No. 1 and 2, p. 207.]

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